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International application number: PCT/AU05/000497

International filing date: 06 April 2005 (06.04.2005)

Document type: Certified copy of priority document

Document details: Country/Office: AU  
Number: 2004901861  
Filing date: 06 April 2004 (06.04.2004)

Date of receipt at the International Bureau: 24 May 2005 (24.05.2005)

Remark: Priority document submitted or transmitted to the International Bureau in compliance with Rule 17.1(a) or (b)



World Intellectual Property Organization (WIPO) - Geneva, Switzerland  
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I, JANENE PEISKER, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. 2004901861 for a patent by SPRAY NOZZLE ENGINEERING PTY. LIMITED as filed on 06 April 2004.



WITNESS my hand this  
Seventeenth day of May 2005

A handwritten signature in black ink, appearing to read 'J. Peisker'.

JANENE PEISKER  
TEAM LEADER EXAMINATION  
SUPPORT AND SALES

AUSTRALIA

Patents Act 1990

## PROVISIONAL SPECIFICATION

APPLICANT: Spray Nozzle Engineering Pty. Limited  
NUMBER:  
FILING DATE:

Invention Title: DIRECT DRIVE HOSE REEL ASSEMBLY

The invention is described in the following statement:-

## **DIRECT DRIVE HOSE REEL ASSEMBLY**

### **Area of the Invention**

5 This invention relates to the area of reels for storing tubing and in particular to hose reels for all hose applications. The present invention relates to a hose reel having an integrated automotive hub and bearing assembly and frame such that a unitary system is provided.

### **Background to the Invention**

10 Traditional mechanical hose reels, even for industrial applications, provided direct hand cranked systems with bearings to assist in the rewind. These systems provided spools for housing the hose mounted on a frame supported between two axial bearing assemblies with a crank means located at one end.

To assist in the rewind process this type of hose reel came to be provided with  
15 either electric motors or compressed air or hydraulic motors. Such systems might be geared or not but all feature a spool type housing of some type mounted inside a support frame which is adapted to both support and drive a specific spool. The drive mechanisms of such reels have conventionally

included chain and sprocket type drives and the like. In addition many reel assemblies rely upon the bearing assembly within the drive unit to assist in supporting the spool.

### **Outline of the Invention**

5 It is an object of this invention to provide an improved hose reel which avoids the limitations that conventional hose reel designs have. In particular it is an object of the invention to provide an improved direct drive to a reel.

The invention is a hose reel assembly having a unitary support member for a hose reel spool which includes an axle, bearing and hub assembly of the  
10 automotive kind, the arrangement being such that an integrated frame, bearing assembly and gearbox drive unit housing is provided.

It is preferred that the axle is a stub axle.

It is preferred that a 5 stud hub construction be used such that assembly and disassembly of the reel is effected in a similar manner to a wheel change on  
15 a vehicle although any multiple stud hub may be used.

It is further preferred that a rewind speed controller and torque multiplier which houses a gear reduction set is located within the spool of the hose reel assembly.

In order that the invention may be more readily understood we will describe by way of non-limiting example a specific embodiment thereof;

### **Description of an Embodiment of the Invention**

In one embodiment of the invention a hose reel assembly is provided in which  
5 the reel is provided with a mounting system or support having a single automotive style stub axle, bearing and five stud hub assembly. By this means simplicity of servicing is provided and assembly and disassembly of the reel is accomplished in a similar manner to changing a vehicle wheel.

In addition the factory assembly of this reel assembly is time effective due to  
10 the use of the 5 stud hub construction. Many previous reels have used two bearing blocks on each side of the hub shaft that require general axial alignment and add to the width of the assembly. The design of the present invention eliminates this requirement.

Additionally other reels rely on the bearing assembly within the drive unit to  
15 support the spool whereas the hub loads in the reel system of the invention are taken up by the support and are not transmitted to the bearings of the drive unit thereby increasing the life of the gear box bearings and components.

The mounting system of the invention is a fully integrated frame, bearing assembly and gearbox drive unit housing all in a single assembly. This allows

for an extremely compact strong unit which keeps overall width to a minimum. This is clearly superior to previous hose reel assemblies which rely on plate bracket type systems to support hub bearings thereby requiring a larger overall width for a smaller spool width.

5 The hose reel system of the invention is also provided with a uniquely shaped rewind speed controller and torque multiplier which houses a gear reduction set that, due to its drum shape, allows it to be located within the spool of the reel assembly . This also keeps width to a minimum.

10 This gearbox housing is cylindrically shaped in accordance with the shape of the spool diameter and is designed to allow retro fit of various drive mechanisms. These can include air, hydraulic electric and spring drive means.

Another feature of the invention is that it includes a reduction box having torque multiplying characteristics that permits the use of smaller style spring cartridges with a greater number of turns and reduced torque allowing cheaper  
15 smaller springs to be used. In addition a modular flanged hub installation may be provided which allow hubs to be quickly and easily exchanged without the need to dismantle the reel assembly which can be converted from any size simply changing the flanged riser assembly

Another feature of the invention is that spools may be provided in modular  
20 designs which allow easy width changes by the simple addition of extension

axle components and drum extensions on standard reels which components may simply be bolted on. A further feature is that the hose reel drum halves taper down in diameter towards the middle of the spool which permits the hose to wind neatly onto the spool. This taper also allows for more efficient  
5 stacking of the spool discs inside each other for transport.

Another benefit of the hose reel system of the invention is that because the reel is hub mounted access is provided at one side to the fluid path and riser unlike previous reels which require significant disassembly to remove the fluid path. As a result any riser and fluid path may be attached to the reel of the  
10 invention.

It is further envisaged that the drive gear could be able to disengage from the driven gear to permit a spool to freewheel when hose was being withdrawn from it. This is effected by the drive motor plate having a pivot option along the mounting face plane and being allowed to slide up slightly and disengage the  
15 drive gear. This action could be sprung and be normally disengaged so that the air or hydraulic drive could initiate an actuator rod which would engage the motor drive gear when motive force was required.

Many variations as described can be made within the framework of the invention and it is not restricted as to size of and type of components. The  
20 invention lies in the provision of a hose reel assembly having an automobile



type hub mounting such that an integrated frame, bearing assembly and gearbox drive unit housing is provided.

While we have described herein one specific embodiment of the invention it is envisaged that other embodiments of the invention will exhibit any number of and any combination of the features of those previously described and it is  
s to be understood that variations and modifications in this can be made without departing from the spirit and scope of the invention.

DATED this 6<sup>th</sup> day of April, 2004

SPRAY NOZZLE ENGINEERING PTY. LIMITED  
By its Patent Attorneys  
A TATLOCK & ASSOCIATES